ATTACHMENT 6

REVISED RICHMOND MUNICIPAL SEWER DISTRICT WASTEWATER INFRASTRUCTURE ANALYSIS (APPENDIX U OF THE DRAFT SEIR)

V.W. HOUSEN
& ASSOCIATES

June 11, 2020

Bibiana Alvarez
AES Environmental
1801 7th Street, Suite 100
Sacramento, CA 95811

Subject: Updated Evaluation of Point Molate Site Development Flows

Dear Ms. Alvarez:

In late 2019, V.W. Housen & Associates evaluated whether the existing RMSD wastewater collection system can accommodate new flows from the development of the former Point Molate Navy Fuel Depot and Winehaven Historic District. Since this time, wet weather flow projections have changed, as documented in the BKF Preliminary Water and Wastewater Master Plan dated May 20, 2020. VWHA has updated the hydraulic model to include the more recent flow projections, and has confirmed that the recommendations have remained the same. Findings and recommendations from the new analysis are reflected in this memo. In summary:

- The Point Molate site encompasses 413-acres, of which approximately 275 are above water. The site is located on the San Pablo Peninsula and is bounded by the San Francisco Bay to the west and the Chevron Richmond refinery to the east.
- The project proposes to develop a portion of the 275 land-based acres and will include residential, commercial, and retail uses (2,040 residential units and 40,000 square feet of office/retail/commercial/restaurant space).
- The project site is not currently connected to RMSD's wastewater collection system.
- BKF has provided the following estimates for projected wastewater flows: average dry-weather flow (ADWF) of 275,672 gallons per day, and peak wet weather flow (PWWF) of 827,016 gallons per day[1].
- The Project's collection system would connect to the City's system near the intersection of Tewksbury Avenue and Contra Costa Street.

VWHA reviewed 2019 GIS data provided by Veolia to identify the point of connection between the proposed development's collection system and the City's existing network. Based on the information and maps provided by BKF, the proposed collection system was assumed to connect to the pipeline that runs along Tewksbury Avenue near Marine Street, at Sewer Fitting H6SF15. This sewer fitting would need to be replaced with a standard manhole in order to facilitate the connection.

The proposed development project was incorporated to the City's hydraulic model by adding the estimated PWWF of 827,016 gallons per day as a point load to the pipe. The network was then evaluated under the current design storm scenario. In the design storm scenario, additional flow from the design rainfall event was added to the remainder of the RMSD sewer system, but not to the Project area.

[1] Compared to earlier wet weather flow projection of 716,747 gallons per day, which was derived from ADWF using a wet weather peaking factor.

The City's hydraulic model is calibrated to current flows. The City's General Plan 2030 identifies three key corridors that will undergo densification in the future, potentially adding new dry weather flow to the system: Downtown/Macdonald Avenue, Hilltop, and Ford Peninsula in Marina Bay. Although the Hilltop corridor is located within City limits, associated wastewater flows are managed by the West County Wastewater District to the north. Although dry weather flows from the two remaining areas are likely to increase, capacity needs for the Downtown/Macdonald Avenue and Ford Peninsula in Marina Bay areas are dictated by wet weather flows. Wet weather flows are not projected to increase significantly in the buildout scenario. Therefore, the existing system model also sufficiently predicts capacity needs in the buildout scenario.

The hydraulic analysis determined that the existing sewer pipelines from Sewer Fitting H6SF15 to the Wastewater Treatment Plant do not have sufficient capacity to carry the added flows from the proposed project. The hydraulic model predicts a sanitary sewer overflow on Tewksbury Avenue during the design storm event. In order to alleviate this capacity constraint, upsizing 530 lineal feet of existing 6-inch diameter pipeline to a 10-inch diameter pipe on Tewksbury Avenue between Marine Street and Clarence and Vacca Streets is required, as shown in Figure 1 on the following page.

The City's Wastewater Treatment Plant (WWTP) and wet weather storage facility have sufficient capacity to convey the added flows. The WWTP is designed to treat up to 42 million gallons per day of wastewater during wet weather events. The WWTP is also equipped with an influent bypass pumping station and 5 million-gallon storage tank. Together, these facilities are designed to receive up to 68 million gallons per day of peak hourly wet weather flow without sanitary sewer overflows.

In addition to reviewing capacity, VWHA reviewed the condition of existing pipelines from the point of connection to the nearest trunk interceptor located west of Cutting Blvd. 24 pipe segments ranging in diameter from 6 to 36 inches, with a total length of 8,262 lineal feet were reviewed. One of these pipe segments has numerous National Association of Sewer Service Companies Pipeline Assessment Certification Program (NASSCO PACP) Structural Grade 4 defects and must be replaced prior to increasing flow through the pipe. This pipe segment, G7MH339_G7MH2887, is also shown in Figure 1. The existing 36-inch diameter pipe would be replaced with a new 36-inch diameter high density polyethylene pipe.

Table 1, which follows Figure 1, summarizes existing pipe capacity and projected wet weather flows for the 24 pipe segments between the point of entry on Tewksbury Avenue to the wastewater treatment plant.

Please let me know if you have questions or need additional information.

Sincerely,

V. W. Housen & Associates

Vivian Housen, P.E.
Principal

Figure 1. Pipes Requiring Replacement with Added Pt. Molate Flows

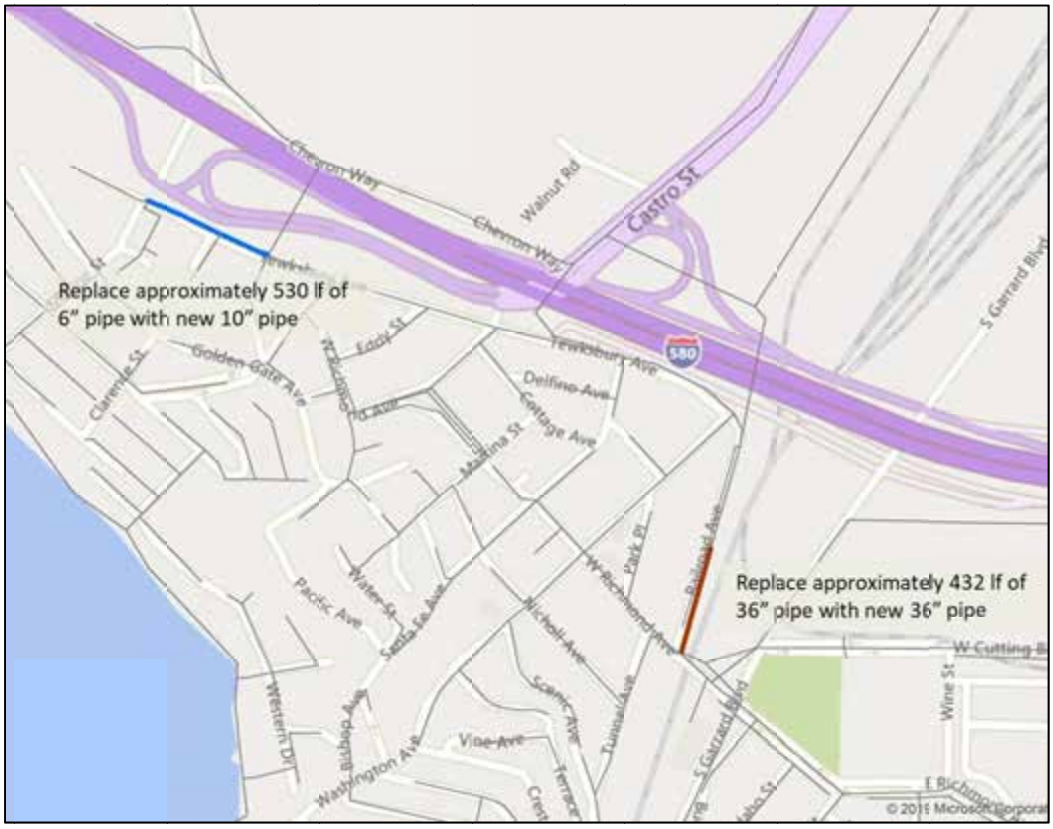

Table 1. Available Pipe Capacity from Point of Entry to Wastewater Treatment Plant

Street Name	Pipe #	Diameter (in)	Capacity (mgd)	Peak WW Flow (mgd)	Notes
Pt. Molate Flow Enters	1	6	1.32	1.23	SSO predicted but addressed with downstream improvements.
Tewksbury	2	6	1.27	1.4	SSO predicted but addressed with downstream improvements.
Tewksbury	3	6	1.27	1.5 (note 1)	SSO predicted. Upsize to 10 inch diameter.
Tewksbury	4	6	1.1	1.05 (note 1)	SSO predicted. Upsize to 10 inch diameter.
Tewksbury	5	6	0.62	1.06 (note 1)	Pipe is surcharged. Upsize to 10 inch diameter to relieve upstream SSOs.
Crossing I-580	6	15	6.49	1.13	
Chevron Way	7	12	4.21	1.54	Pipe is surcharged due to downstream constraint. However, water level is > 5'below grade.
Chevron Way	8	12	0.42	1.55	Pipe is surcharged. However water level is > 5' below grade.
Castro Street	9	12	0.42	1.55	Pipe is slightly surcharged. Diameter increases downstream of the line.
Castro Street	10	21	1.87	1.78	
Parallel to I-580	11	21	1.87	1.77	Incoming flows merge.
Parallel to I-580	12	36	6.19	7.04	Not surcharged.
Crossing I-580	13	36	6.35	7.04	Not surcharged.
Crossing I-580	14	36	6.32	7.06	Not surcharged.
Railroad Ave	15	36	6.31	7.17	Not surcharged.
Railroad Ave	16	36	6.32	7.23	Not surcharged.
W. Cutting Blvd.	17	36	6.28	7.64	Not surcharged.
W. Cutting Blvd.	18	36	7.82	8.93	Not surcharged.
W. Cutting Blvd.	19	39	14.19	8.89	
W. Cutting Blvd.	20	39	14.07	9.09	
W. Cutting Blvd.	21	39	22.47	9.09	
Canal Blvd.	22	66	75.99	49.28	Incoming flows merge.
Canal Blvd.	23	66	75.99	49.25	
Canal Blvd. - WWTP	24	66	75.99	49.95 (note 2)	During peak wet weather, the plant receives 0.75 mgd from other pipelines. The plant has capacity to treat 42 mgd, and bypass an additional 28 mgd during peak events (i.e. 70 mgd instantaneous flow).

Notes:

(1) Flow prior to Pt. Molate addition is 0.044 - 0.075 mgd . Flow after adding Pt. Molate flows and upsizing to 10-inch pipe is 1.25 - 1.27 mgd.

(2) Compare to 49.57 mgd without Pt. Molate flows.